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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,149	04/18/2007	Adegboyega K. Oyelere	26505-525 NATL	1956

30623 7590 05/14/2008

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EXAMINER	
LOEWE, SUN JAE Y	

ART UNIT	PAPER NUMBER
1626	

MAIL DATE	DELIVERY MODE
05/14/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,149	OYELERE ET AL.	
	Examiner	Art Unit	
	SUN JAE Y. LOEWE	1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6,7,10-17,20-23,26-33,44 and 45* is/are pending in the application.

4a) Of the above claim(s) *7,12,20-23,28,29 and 31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6,10,11,13-17,26,27,30,33,44 and 45* is/are rejected.

7)☒ Claim(s) *32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

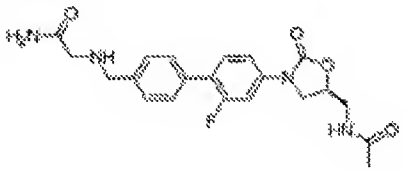
1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8-29-2006;8-31-2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 3, 4, 6, 7, 10-17, 20-23, 26-33, 44 and 45 are pending in the instant application. Claims 2, 5, 8, 9, 18, 19, 24, 25 and 34-43 were cancelled by amendment filed on March 7, 2008.

Election/Restrictions

2. Applicant's election without traverse of Group I, and compound 101 (below) in the reply filed on March 7, 2008 is acknowledged.



3. The guidelines below were applied for the search and examination detailed herein.

[Excerpts MPEP § 1893.03(d)]

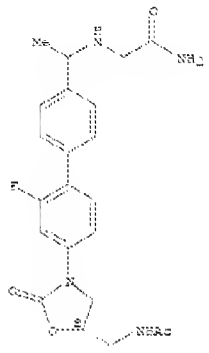
Note: the determination regarding unity of invention is made without regard to whether a group of inventions is claimed in separate claims or as alternatives within a single claim. The basic criteria for unity of invention are the same, regardless of the manner in which applicant chooses to draft a claim or claims.

>If an examiner (1) determines that the claims lack unity of invention and (2) requires election of a single invention, when all of the claims drawn to the elected invention are allowable (i.e., meet the requirements of 35 U.S.C. 101, 102, 103 and 112), the nonelected invention(s) should be considered for rejoinder. Any nonelected product claim that requires all the limitations of an allowable product claim, and any non-

¶ 13.20 National Stage Election of Species in 35 U.S.C. 371 Applications

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If

The elected species appeared to be allowable. Thus, the search and examination was extended to non-elected species of



to determine patentability of the generic claims encompassing Applicant's election. The non-elected species is anticipated by the prior art (Section 10). The following subgenus of compounds were further evaluated: Q=-NR4R4; L1=bond or unsubstituted alkyl; W=O; L2=alkyl optionally substituted with R4; X=-NR4; R3=NR7COR7; L, R1, R2 as defined in claim 1. Multiple species within this subgenus were not allowable under 35 USC 112 1st paragraph (see Sections 8 and 9).

Based on the non-allowability of the generic claims, all non-elected species are currently held withdrawn from further consideration.

4. Claims 7, 12, 20-23, 28, 29 and 31 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected subject matter. Election was made **without** traverse in the reply filed on March 7, 2008.

Priority

5. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119(e) as follows.

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application (Serial No. 60/490,855) fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. The Markush group of claim 1 is not supported by the disclosure in either filed application. Therefore, the priority date claim 1 is the filing date of PCT/US04/24334 (July 28, 2008).

Information Disclosure Statement

6. The information disclosure statements (dated August 29, 2006 and August 31, 2007) were filed in compliance with the provisions of 37 CFR 1.97 and 37 CFR 1.98. The statements were was considered. Signed copies of form 1449 is enclosed herewith.

Claim Objections

7. Claims 1, 3, 4, 6, 10, 11, 13-17, 26, 27, 30, 32, 33, 44 and 45 objected to for containing non-elected subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1, 3, 4, 6, 10, 11, 13-17, 26, 27, 30, 33, 44 and 45 rejected under 35 USC 112 1st paragraph as failing to comply with the written description requirement.

The MPEP states that the purpose of the written description requirement is to ensure that the inventor had possession, as of the filing date of the application, of the specific subject matter later claimed by him. The courts have stated:

> "To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997); In re Gostelli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) ("[T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using

> "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." Lockwood, 107 F.3d at 1572, 41 USPQ2d at 1966." Regents of the University of California v. Eli Lilly & Co., 43 USPQ2d 1398.

Further, for a broad generic claim, the specification must provide adequate written description to identify the genus of the claim. In *Regents of the University of California v. Eli Lilly & Co.* the court stated:

> "A written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." *Fiers*, 984 F.2d at 1171, 25 USPQ2d 1601; *In re Smythe*, 480 F.2d 1376, 1383, 178 USPQ 279, 284985 (CCPA 1973) ("In other cases, particularly but not necessarily, chemical cases, where there is unpredictability in performance of certain species or subcombinations other than those specifically enumerated, one skilled in the art may be found not to have been placed in possession of a genus …") *Regents of the University of California v. Eli Lilly & Co.*, 43 USPQ2d 1398.

The MPEP states that for a generic claim the genus can be adequately described if the disclosure presents a sufficient number of representative species that encompass the genus. MPEP § 2163. If the genus has a substantial variance, the disclosure must describe a sufficient variety of species to reflect the variation within that genus. See MPEP § 2163. Although the MPEP does not define what constitute a sufficient number of representative species, the courts have indicated what do not constitute a representative number of species to adequately describe a broad genus. In *Gostelli*, the courts determined that the disclosure of two chemical compounds within a subgenus did not describe that subgenus. *In re Gostelli*, 872, F.2d at 1012, 10 USPQ2d at 1618.

The Guidelines for Examination of Patent Applications Under 35 USC 112, ¶1, "Written Description" Requirement (Federal Register, Vol. 66, No. 4, pg. 1105, column 3), in accordance with MPEP § 2163, specifically state that for each claim drawn to a genus the written description requirement may be satisfied through sufficient description of a representative number of species by a) actual reduction to practice; b) reduction to drawings or structural chemical formulas; c) disclosure of relevant, identifying characteristics (ie. structure) by functional characteristics coupled with a known or

disclosed correlation between function and structure. The analysis of whether the specification complies with the written description requirement calls for the examiner to compare the scope of the claim with the scope of the description to determine whether applicant has demonstrated possession of the claimed invention (Federal Register, Vol. 66, No. 4, p. 1105, 3rd column, 3rd paragraph). Below is such comparison.

I. ***Scope of Claims (Based on Examined Subject Matter)***

Compounds encompassed by the subgenus defined in Section 3.
The following variables are claimed broader than what is supported by the disclosure: R^1, R^2 and R^7.

II. ***Scope of Disclosure***

Reduction to Practice:

The compounds reduced to practice support the following:

R^1 and R^2: H, F, unsubstituted alkyl;

R^7: H, unsubstituted alkyl.

Reduction to Structural or Chemical Formulas:

The only disclosure, in addition to the species reduced to practice, is in form of *lists* of possible groups (eg., benzimidazolyl, benzofuranyl, benzothiofuranyl, benzothiophenyl, benzoxazolyl, for heterocycle).
This type of disclosure is a representation of any of the species it entails.
A"laundry list" disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not "reasonably lead" those skilled in the art to any particular species. MPEP 2163.I.A. and *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (Fed. Cir. 1996).
Therefore, there is no disclosure of species (eg. by reduction to structural/chemical formulas) in addition to those reduced to practice.

Correlation between Structure and Function:

A correlation between structure and function, for the instantly claimed genus of

compounds, is neither known in the art nor disclosed in the specification. Thus, it is not understood what *specific structures* for the unrepresented variables will lead to compounds that have the instantly claimed activity as antibacterial agents.

III. *Analysis of Fulfillment of Written Description Requirement:*

The structure/activity relationship (SAR) for binding and activity is elucidated upon analysis of IC_{50} data of multiple compounds with various types of structural modifications. These types of studies provide insight into the structural limitations that are required for activity, ie. specific structural elements tolerated for the claimed activity. In the absence of such correlation, it is not possible to determine what structural modifications will allow for the preservation of the desired activity.

In conclusion: (i) substantial structural variation exists in the genus/subgenus embraced by claims 1, 3, 4, 6, 10, 11, 13-17, 26, 27, 30, 33, 44 and 45; (ii) disclosure of species supporting genus is limited to compounds reduced to practice, which scope is not commensurate with the scope of genus/subgenus claimed; (iii) common structural attributes of the claimed genus/subgenus, combined with a correlation between structure and function, is neither disclosed in the instant application nor commonly known in the art. Thus, the specification fails to provide adequate written description for the genus of compounds claimed and does not reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the entire scope of the claimed invention.

(Enablement)

9. Claims 1, 3, 4, 6, 10, 11, 13-17, 26, 27, 30, 33, 44 and 45 rejected under 35 U.S.C. 112, first paragraph. The specification is *enabling* for the use of the compounds

that have adequate written description (see Section 8). The specification is *not enabling* for the use of compounds not supported by the disclosure.

In conclusion, the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with the claims.

The standard for determining whether the specification meets the enablement requirement was cast in the Supreme Court decision of *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916) which postured the question: is the experimentation needed to practice the invention undue or unreasonable? That standard is still the one to be applied. *In re Wands*, 858 F.2d 731, 737, 8USPQ2s 1400, 1404 (Fed. Cir. 1988). MPEP 2164.01(a) states "There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is undue". The factors are applied below to the instant claims.

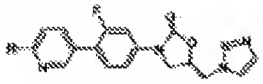
The breadth of the claims
Compounds not supported by the disclosure (see above section 8.I and 8.II.).

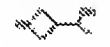
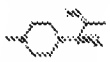
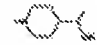
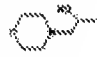
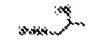
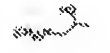
The nature of the invention
The compounds are disclosed to be antibacterial agents.

The state of the prior art/level of ordinary skill/level of predictability
The level of ordinary skill is high, but the level of predictability in the art is low. Although SAR studies are not available for the instantly claimed genus of compounds, these studies have been disclosed for other compounds with the same utility, see example below.

- Reck et al. (Table 1):

Table 1. SAR of Alcohols and Ethers Compared to Unsubstituted Lead 3



Compd	R	S.a.[a] MIC (μg/mL)	S.p.[b] MIC (μg/mL)	S.p. LinR[c] MIC (μg/mL)	H.inf[d] MIC (μg/mL)	Solub. (μM)[e]	PPB Human[f] (%)	MGD-A K_i[g] (μM)
3	H	0.25	<0.06	1	2	12.5	ND	>8.3
22	$NHCH_3$	0.25	0.13	1	1	100	ND	4.8
23	CH_2OCH_3	0.5	0.13	1	4	100	ND	1.7
24	$(R)CH_2CH(OH)R$	0.25	<0.06	1	2	>400	76	4.3
25	$(R)CH_2CH(OCH_3)R$	1	0.25	2	8	>400	ND	3
26	$(S)CH_2CH(OH)R$	0.5	<0.06	1	2	>400	67	5.9
27	$(S)CH_2CH(OCH_3)R$	1	0.25	4	16	>400	ND	2.5
28	$(CH_3)_2C(OH)CH_2NH$	0.5	0.13	1	16	>400	ND	11.3
29	$(CH_3)_2CHCH_2NH$	1	0.25	2	8	200	ND	6
31	$(S)CH_2CH(OH)R$	0.25	<0.06	1	1	>400	46	48
7		64	16	>64	64	>400	ND	58
35		8	0.25	1	8	>400	ND	41
36		64	4	32	64	>400	ND	136
37		2	0.25	2	4	>400	33	84
39		4	0.5	2	4	>400	ND	>378
38		4	0.25	2	8	>400	ND	>378

[a] Methicillin-susceptible *Staphylococcus aureus* ATCC29213. [b] Penicillin-susceptible *Streptococcus pneumoniae* ATCC49619. [c] Linezolid-resistant (LinR) *Streptococcus pneumoniae*. [d] *Haemophilus influenzae* ATCC49247. Minimum inhibitory concentration (MIC): lowest drug concentration that reduced growth by 80% or more.[24] [e] Solubilities were obtained by nephelometric analysis of test compounds diluted into the MGD-A assay mixture. [f] Human plasma protein binding. ND: no data. [g] Moenomycin-competitive K_i.[25]

As discussed in section 8, it is not known what structural limitations are required for preservation of activity within the genus. In view of the low level of predictability one of ordinary skill would not know what structural modifications within the unrepresented genus (ie. unrepresented by the disclosure), if any, would lead to compounds that are active.

The amount of direction provided by the inventor/existence of working examples
Direction and working examples are limited to the genus of compounds that have adequate written description support (see Section 8.II).

The quantity of experimentation needed to make or use the invention
It is not known which of the unrepresented compounds meet the structural requirements for activity. Thus, one of ordinary skill would not be enabled by the disclosure to make/use the claimed agonists. The amount of experimentation

needed to practice the invention is undue. Further, absent an alternate utility, one of ordinary skill would not be enabled to use the compounds within the genus that are not adequately supported in the disclosure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 3, 4, 6, 10, 11, 13-17, 26, 27, 30, 33, 44 and 45 rejected under 35 U.S.C. 102(e) as being anticipated by Wu et al. (caplus an 2005:120906; priority date June 2, 2004). The reference teaches the compound shown in Section 3.

The applied reference has a common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Conclusion

11. No claims allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sun Jae Y. Loewe whose telephone number is (571) 272-9074. The examiner can normally be reached on M-F 7:30-5:00 Est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on (571)272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sun Jae Y. Loewe, Ph.D./
5-8-2008

/Kamal A Saeed, Ph.D./
Primary Examiner, Art Unit 1626